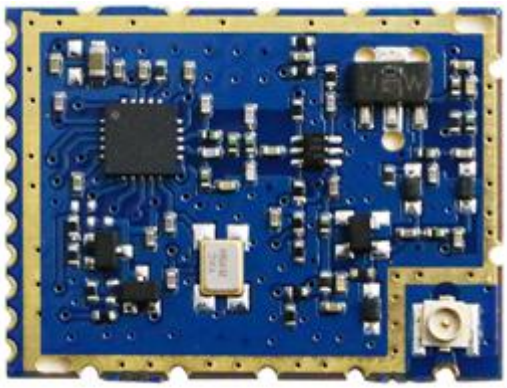
High-power FSK Wireless Transceiver Module

SPECIFICATION

Model No.: **DL-RTC1101PA**

Version: V1.0



Before using this module, please read this document carefully, and pay attention to the following important matters:

This module is an electrostatic sensitive product. Please operate it on an anti-static workbench during installation and testing.

The module uses an external antenna by default. The antenna can be a wire antenna or a standard UHF antenna. You can choose a specific antenna according to the actual situation. If the terminal product uses a metal shell, be sure to install the antenna outside the metal shell. Otherwise, the RF signal will be seriously attenuated, which will affect the effective distance.

Metal objects and wires should be kept away from the antenna as much as possible.

When installing the module, nearby objects should be kept at a sufficient safety distance from the module to prevent short circuit damage.

This module should be used in a dry environment. Please do not make any liquid substance come into this module.

Please use an independent voltage regulator circuit to supply power to this module, and avoid sharing with other circuits. The tolerance of the power supply should not be less than 5%.

Limitations:

This module is intended to be embedded in the customer's terminal product application, and does not provide a casing itself. It is not recommended that the customer directly resell this module as a final product without permission.

This series of modules are in accordance with commonly used international standards. If there is any special certification needed, we can adjust certain indicators according to your needs.

This module cannot be applied to life rescue, life-support systems, or any occasion where personal injury or life threatening may cause by equipment failure. Any organization or individual carrying out the above-mentioned applications shall bear all risks at their own.

We will not be responsible for any direct or indirect damage, injury or loss of profits caused by products that use this module.

DL-RTC1101PA was designed base on TI-Chipcon' S CC1101 wireless transceiver chip, with a PA integrated on board. It adopts high-power PA and LNA architecture, electronic switch and control circuit to realize long-distance data transmission, and FSK/ASK/OOK/MSK modulation available in this high-power RF transceiver module. The transmitting power can be set by external power supply, and the maximum transmitting power can reach 1W, can be used in 315/434/868/915mhz ISM/SRD frequency band system.

It provides extended hardware support for packet processing, data buffering, group transmission, idle channel evaluation, link quality indication, and wake-on radio function. Its data streams can be modulated via Manchester coding.

This module integrates all RF-related functions. Users do not need to have a deep understanding of RF circuit design; they can use this module to easily develop wireless products with stable performance and high reliability, shortening the product development cycle.

It has excellent performance and is easy to be used in your product design, is the best choice for the application of long-distance scheme. It can be used in consumer electronics, automatic meter reading system, two-way alarm, etc.

1. Features:

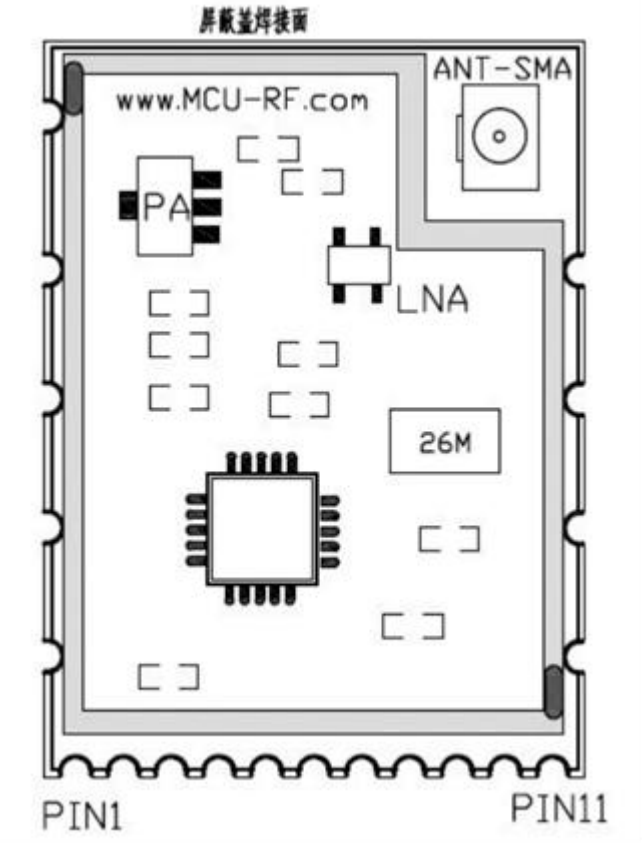
- 1000m transmission distance (1200bps)
- Working frequency 433.92m, other frequencies (300-348Mhz, 400-464Mhz, 800-928Mhz) available, but need to be customized.
- Operating voltage: 1.8V-3.6V
- Operating temperature range: -40℃ ~ +85℃
- Low current loss in power saving mode
- Efficient serial programming interface
- High sensitivity, high output power and programmable

2. Applications:

- Wireless sensor;
- Home automation;
- Automated data collection;
- Industrial remote control, telemetry;
- Data monitoring and transmission;
- Home Appliance Control;

- Security, alarm control;

3. Pins Definition:



Pin	Definition	Name	Type	Description
1	PIN-1	GND	RF VDD	Grounding, common ground with the system
2	PIN-2	PA_VCC	Analog IO	Power Supply: DC3.3V-12V
3	PIN-3	VDD-3V3	DATA IO	Power Supply: DC 1.8-3.6V
4	PIN-4	SI	Power input	Lower than 3.6V is recommended
5	PIN-5	SCLK	DATA input	Continuous configuration interface , Clock input
6	PIN-6	SO	DATA output	Continuous configuration interface , Clock output
7	PIN-7	GDO2	DATA output	General purpose digital output pin
8	PIN-8	GDO0	DATA IO	General purpose digital output pin
9	PIN-9	GDO0	DATA IO	General purpose digital output pin
10	PIN-10	TX_EN	Control interface	TX-Enable
11	PIN-11	RX_EN	Control interface	RX-Enable

Table 1: Pins Definition of DL-RTC1101PA Module

4. Package Outline

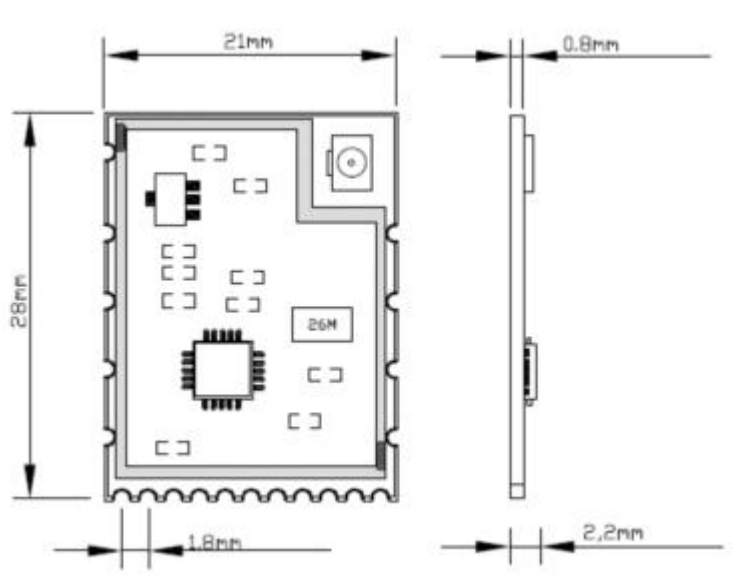


Figure 1: Module size

5. Technical Parameter

Absolute Maximum Rating:

Description	Min.	Max.	Unit
Supply voltage	2.4	3.3	V
VCC_PA	3.3	12	V
Input RF level		-10	dBm
Storage temperature	-55	125	℃
Reflow temperature		260	℃

Recommended operating conditions

Description	Min.	Typi.	Max.	Unit	Remark
Operating temperature, Ta	-40	25	85	℃	
Operating voltage	2.1		3.3	VDC	
Medium frequency				MHz	SAW select

DC characteristics

Description	Min.	Typi.	Max.	Unit
VDD Power Supply	2.4		3.3	VDC
Current in RX mode	19	20	21	mA
Current in Sleep mode		1		uA

RF characteristics (Unless otherwise stated, the temperature is 25 ℃, and VCC is 3.3V)

No	Characteristics	Technical Parameter			Unit
		Min.	Typi.	Max.	
1	Frequency range	250	433.92	1000	MHz
2	Antenna signal input peak value	-20	-10		dbm
3	Receiving sensitivity	-118		-115	dbm
4	Transmission rate		2.4	50	kb/s
5	LNA gain		16	18	dB
6	PA-3.3V		21.5	22	dBm
7	PA-9.0V		29	30	dBm
8	3.3V transmitting current		130		mA
9	9.0V transmitting current		350		mA

6. Connection between module and terminal equipment (TTL electrical level)

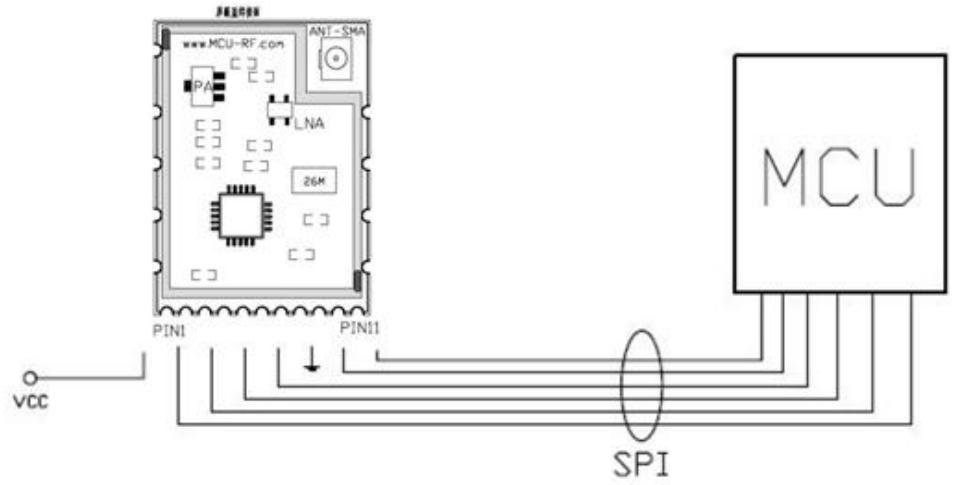


Figure 2: Wiring diagram for module application

7. Problems in module application

Considering the complexity of data transmission over the air, the radio frequency modulation method of the data, and some inherent characteristics of electromagnetic waves, the following issues should be considered during the application process.

1. The electromagnetic interference of the application environment will affect the actual distance of the remote control. Electromagnetic wave interference is divided into mainboard power supply interference, TFT screen data cable interference, Flash data exchange interference; and airborne carrier frequency interference, noise interference, high-power signal source interference, etc.
2. Factors such as product size, internal space, and coating of the shell will cause the attenuation of the wireless signal, which will affect the remote-control distance. Usually the narrow internal space of the product is not conducive to the extension of the antenna. The outer shell should avoid metal or metal plating as much as possible.
3. To choose a proper antenna is very important. The antenna is an important part of the communication system, and its performance directly affects the indicators of the communication system. We must pay attention to its performance (antenna type, antenna electrical performance) when selecting the antenna. Please feel free to contact us for consultation or recommendation, if you need.

8. Contact us

Shenzhen DreamLnk Technology Co., Ltd

★ Data collection, Smart home, Internet of Things applications, Wireless remote control technology, Remote active RFID, Antennas ★

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